

# PATENT SPECIFICATION

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(72) Inventor EDWARD JOLASSE MILES



## (54) EMULSIFIERS

(71) We, NEWTON CHAMBERS & COMPANY LIMITED, a British Company, of Thornciffe, Chapeltown, Sheffield S30 4YP, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

It is well known to use castor oil soap as an efficient and relatively cheap emulsifier, especially in disinfectants. Probably the major active component in such emulsifiers is a soap of ricinoleic acid and the castor oil soap is a convenient source of this, mixed with minor proportions of other soaps.

Castor oil, and therefore castor oil soaps, are tending to become less available and therefore more expensive and for this and other reasons it would be desirable not to be wholly dependent upon castor oil soaps as emulsifiers in disinfectants. It is known from British Specification No. 1,236,594 to provide an emulsifier comprising a mixture of soaps of castor oil and fatty acid component in particular proportions, the fatty acid component comprising oleic or linoleic acid. Such emulsifiers can suffer from the disadvantage that when stored in metal containers they may turn rancid and also they may have a rather noticeable smell. This is particularly undesirable when they are to be used as emulsifiers in disinfectants, especially perfumed disinfectants.

It has been our object to devise new emulsifiers that are of a special value for disinfectants and that can be used as a satisfactory and economical alternative to castor oil soaps alone.

An emulsifier according to the invention comprises a mixture of from 10 to 90% of castor oil soap and from 90 to 10% of one

preferably a sulphate of a long (C<sub>6-18</sub>) chain aliphatic alcohol and most preferably of a long (C<sub>6-18</sub>) chain secondary aliphatic alcohol.

The preferred chain length for the alkyl sulphate is 10 to 15 carbon atoms. Suitable materials are generally available as mixtures of varying chain lengths, the predominant chain length being from 10 to 15 carbon atoms. The preferred materials for use in the invention are mixtures which are predominantly lauryl (i.e. C<sub>12</sub>) sulphates, together with other alkyl sulphates. The preferred sulphate is secondary lauryl sulphate which is available commercially as a solution under the trade name Teepol 610 ("Teepol" is a registered Trade Mark).

The castor oil soap may be any suitably saponified castor oil. It is normally a sodium soap, but other soaps, for example potassium or other alkali metal or amine soaps, can be used.

The proportion of castor oil soap to alkyl sulphate may be varied within the ranges indicated but generally the mixture contains, based on the combined weight of castor oil soap and alkyl sulphate, from 20 to 70%, more preferably from 30 to 60% of the castor oil soap and from 80 to 30%, more preferably from 70 to 40%, of the alkyl sulphate.

It is particularly surprising that the compositions of the invention are suitable emulsifiers since we have tested many related compositions and found them to be wholly unsatisfactory, usually having little or no emulsification properties. Thus, for example, mixtures of "Teepol" and various fatty acid soaps, such as soaps of oleic acid, rosin acids, tall oils or coconut fatty acids all have very poor emulsification properties.

Emulsifying agents of the invention are of particular value in disinfectant compositions.

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Inventor: EDWARD JOLASSE MILES

By a direction given under Section 17 (1) of the Patents Act 1949 this application proceeded in the name of IZAL LIMITED, a British company of Thornciffe, Chapeltown, Sheffield S30 4YP.

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It is well known to use castor oil soap as an efficient and relatively cheap emulsifier, especially in disinfectants. Probably the major active component in such emulsifiers is a soap of ricinoleic acid and the castor oil soap is a convenient source of this, mixed with minor proportions of other soaps.

Castor oil, and therefore castor oil soaps, are tending to become less available and therefore more expensive and for this and other reasons it would be desirable not to be wholly dependent upon castor oil soaps as emulsifiers in disinfectants. It is known from British Specification No. 1,236,594 to provide an emulsifier comprising a mixture of soaps of castor oil and fatty acid component in particular proportions, the fatty acid component comprising oleic or linoleic acid. Such emulsifiers can suffer from the disadvantage that when stored in metal containers they may turn rancid and also they may have a rather noticeable smell. This is particularly undesirable when they are to be used as emulsifiers in disinfectants, especially perfumed disinfectants.

It has been our object to devise new emulsifiers that are of a special value for disinfectants and that can be used as a satisfactory and economical alternative to castor oil soaps alone.

An emulsifier according to the invention comprises a mixture of from 10 to 90% of castor oil soap and from 90 to 10% of one or more alkyl sulphates in which the alkyl group or groups each contain from 8 to 18 carbon atoms, the percentages being by weight based on the total weight of the mixture.

The preferred emulsifiers of the invention consist essentially of the castor oil soap and the alkyl sulphate. The alkyl sulphate is

preferably a sulphate of a long (C<sub>8</sub>-18) chain aliphatic alcohol and most preferably of a long (C<sub>8</sub>-18) chain secondary aliphatic alcohol.

The preferred chain length for the alkyl sulphate is 10 to 15 carbon atoms. Suitable materials are generally available as mixtures of varying chain lengths, the predominant chain length being from 10 to 15 carbon atoms. The preferred materials for use in the invention are mixtures which are predominantly lauryl (i.e. C<sub>12</sub>) sulphates, together with other alkyl sulphates. The preferred sulphate is secondary lauryl sulphate which is available commercially as a solution under the trade name Teepol 610 ("Teepol" is a registered Trade Mark).

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It is particularly surprising that the compositions of the invention are suitable emulsifiers since we have tested many related compositions and found them to be wholly unsatisfactory, usually having little or no emulsification properties. Thus, for example, mixtures of "Teepol" and various fatty acid soaps, such as soaps of oleic acid, rosin acids, tall oils or coconut fatty acids all have very poor emulsification properties.

Emulsifying agents of the invention are of particular value in disinfectant compositions. Thus they may be used for the emulsification into water of essential oils and/or perfumes and/or phenolic compounds. Particularly preferred disinfectants are those containing terpenes and/or terpene alcohols and/or phenolic compounds. Terpenes and terpene alcohols are conveniently provided by

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pine oil, and, of course, the term "essential oils" includes ethereal oils which are terpene (or benzene) derivatives.

The principal active ingredient is a phenol or a combination of phenols. For example typical disinfectants contain from 0.5 to 6% by weight of phenols, from 0.2 to 10% by weight of essential oils and/or perfumes (that may consist partially or wholly of pine oil), and from 3 to 10% by weight of the emulsifying agent, with the balance being water. The above percentages are by weight based on the total weight of the emulsion. Minor amounts of suitable additives, e.g. germicides

may also be present. Preferred compositions generally contain from 1 to 2.5%, e.g. from 1 to 1.5% of the phenols, from 2 to 5% of pine oil and from 3.5 to 8% of the emulsifier.

It is generally necessary to maintain the compositions at an alkaline pH, for example pH 9 to 10, and this can be achieved by including a base such as sodium hydroxide in the composition.

The following are examples of preferred compositions of disinfectant compositions (in percentages by weight):

|    |  | (1)       | (2)       | (3)       |
|----|--|-----------|-----------|-----------|
| 30 | Castor oil soap                                      | 1.7       | 2.7       | 2.1       |
|    | Sodium Secondary Alkyl Sulphate (sold as Teepol 610) | 3.8       | 4.6       | 2.0       |
|    | Sodium Hydroxide                                     | 0.15      | 0.24      | 0.19      |
|    | Phenols  | 1.0       | 1.5       | 2.0       |
| 35 | Pine Oil   | 4.5       | 5.6       | —         |
|    | Perfume  | —         | —         | 0.5       |
|    | Water  | —         | —         | remainder |
|    |  | remainder | remainder | remainder |

The above compositions were made by first preparing the castor oil soap by saponification with caustic soda and part of the water, and then adding and dissolving the alkyl sulphate. After cooling, the other ingredients were incorporated. The phenols that were used comprised a mixture of 42% by weight of benzylresol, 19% by weight of dichloroxylenol, and 39% by weight of 2 - phenyl - 6 - chlorophenol.

which the predominant chain length is 12 carbon atoms.

7. An emulsifier according to claim 1 substantially as hereinbefore described.

8. A disinfectant composition comprising an aqueous emulsion of at least one component selected from essential oils, perfumes and phenolic compounds in which the emulsifying agent is an emulsifier according to any preceding claim.

9. A composition according to claim 8 containing from 0.5 to 6% of phenols, from 0.2 to 10% of essential oils and/or perfumes and from 3 to 10% of the emulsifying agent, the percentages being by weight based on the total weight of the emulsion.

10. A composition according to claim 9 in which the component of essential oils and/or perfumes is predominantly or wholly pine oil.

11. A composition according to claim 9 containing from 1 to 2.5% of phenols, from 2 to 5% of pine oil and from 3.5 to 8% of the emulsifying agent.

12. A composition according to any of claims 8 to 11 having a pH of from 9 to 10.

13. A composition according to claim 8 substantially as hereinbefore described with reference to the examples.

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